# WHAT EVERY ONE SHOULD KNOW ABOUT CANCER

## A HANDBOOK FOR THE GENERAL READER

AMERICAN SOCIETY FOR THE CONTROL OF CANCER

25 WEST 43D STREET, NEW YORK

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FOR THE CONTROL OF CANCER

25 West 43d Street, New York

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# FOREWORD

This booklet is designed to present, in language easily understood by the general reader, the essential facts about cancer; its frequency, predisposing conditions and symptoms; the modern scientific methods of treating it and, most important of all, the precautions which should be taken by all persons who would avoid it.

It describes the disease as it manifests itself in the various organs and structures of the body. It gives information for the guidance of those who may be personally interested in the disease or who may be in the position of educators in matters of public health. It explains why people should avoid what physicians call "quack" treatments.

A few words as to the authorship of these pages may be of interest. Just prior to the entrance of the United States into the World War, the Advisory Council of the American Society for the Control of Cancer appointed a committee of five to supervise the preparation and distribution of a handbook on cancer for circulation among public health workers and the general public.

The committee invited ten cancer specialists to collaborate in the preparation of the book, each writing upon that particular form of the disease with which he was most familiar. The

completed draft was sent to the members of the Society's Advisory Council for critical review. A final draft was then prepared and ordered published, with the endorsement of the Council and in the name of the Society.

The committee was composed as follows: Dr. Francis Carter Wood, Director of the Institute of Cancer Research, Columbia University, New York City, Chairman; Dr. James Ewing, Professor of Pathology, Cornell University Medical College, and Director of Cancer Research at the Memorial Hospital, New York City; the late Dr. Harvey R. Gaylord, Director of the New York State Institute for the Study of Malignant Disease, Buffalo, New York; Dr. E. E. Tyzzer, Professor of Comparative Pathology, Harvard University, and former Director of the Cancer Commission of Harvard University, Boston, Massachusetts; and Dr. Frederick L. Hoffman, Consulting Statistician, Prudential Life Insurance Company, Newark, New Jersey.

Feeling that there has been sufficient advance in the understanding of cancer to warrant considerable alterations in the text as printed, the book has been twice revised, in May, 1925, and July, 1927. Much care has been taken in the preparation of the manuscript. The Society issues the book in the belief that it represents the mature judgment of the leaders of the medical profession at the present time.

# GENERAL INFORMATION

# I.

# GENERAL INFORMATION

Cancer is one of the most frequent and most fatal of all the diseases which afflict mankind, having caused one death out of every eight after the age of forty in the Registration Area of the United States in 1924.*

These are astounding figures, but it should be clearly understood that they do not imply that of all those persons who are forty years of age one in eight is going to die of cancer during that year. On the contrary, the yearly rate at forty is only about one cancer death among several thousand living persons.

Familiar to the earliest physicians, cancer has persisted through the ages. While an immense fund of knowledge about it has been accumulated, there is still much to be learned. The ultimate cause or causes remain obscure. It is preventable and curable to some extent.

## The Frequency and Increase of Cancer

In the continental part of the United States the annual mortality from all forms of cancer is estimated to have been about 103,000 in

*According to latest reports of the U. S. Census Bureau

1924, the latest year for which figures are now available. The recorded mortality rate for 1924 was 91.9 per 100,000 persons per annum.

More people die of cancer than of all the infectious diseases except tuberculosis. More die of cancer than are killed by railroads, street cars, automobiles, fires, drowning, mining accidents, machinery, poisons, homicides, and suicides.

The recorded mortality from cancer is on the increase in most civilized countries. How much of this is actual and how much is due to improvements in diagnosis is not known. In the United States, the annual increase in the official cancer death rate is approximately 2.8 per cent.

Cancer is almost exclusively a disease of adult life; for, of the total number of deaths from cancer at all ages, about 98.7 per cent. occur after the age of twenty.

Cancer appears in many forms. It may affect almost any organ or part of the body. The most important form for both sexes combined is cancer of the stomach. This accounts for about 21,400 deaths per annum in the United States Registration Area.

In the Registration Area the number of deaths from cancer of the female generative organs is about 13,000 per annum; from cancer of the female breast about 8,300 (a very high frequency, for it occurs in only half the adult population).

In the Registration Area the deaths from cancer of the mouth and tongue are about 1,100; from cancer of the peritoneum, intestines and rectum combined, about 12,600; from cancer of the skin, about 2,600; and from cancer of other organs or parts, about 17,400.

Cancer is especially frequent among women. While of all deaths over the age of forty, one in ten among men is due to this disease, among women over this age the proportion is one in every seven. Between the ages of thirty-five and forty-five, two-and-a-half times as many women as men die of cancer; between forty-five and fifty-five, twice as many women as men die of it.

The excessive mortality among women is due to cancer of the breast and the special organs of generation. Excluding cancer of the breast and of the female generative organs, the relative frequency of all other forms of cancer combined is approximately 25 per cent. higher in males than in females.

## Racial and Social Differences

The white races are apparently more liable to cancer than are primitive races, such as North American Indians and Orientals, but the statistics are so inaccurately kept among primitive races as to make any close comparison unreliable.

Cancer of the uterus seems to be more com-

mon among negro women in America than among white women, and the general recorded cancer death rate is rapidly rising in the negro race in those places where certifications of the causes of death are most accurately made. Cancer of the breast and cancer of the ovary are more frequent among the unmarried women than among the married. Cancer of the uterus is more common among the married than among single women. Cancer of the mouth and tongue is much more frequent in men then in women.

## The Value of Existing Knowledge

In spite of the fact that scientific knowledge of all the causes of cancer is still in many points imperfect, the practical knowledge of how to prevent and arrest the disease, and save the patient in individual cases is already in many respects satisfactory. It is estimated that one-quarter of the deaths from accessible cancer, with all the attendant suffering, could be prevented, if all the members of the medical and nursing professions as well as the public were instructed in what each should know about this disease. In cancer of the skin, the lip and the breast, the results would be better than this.

Practically without exception, cancer is at first a local disease; that is, it begins in a little spot. It may not invade the rest of the body for a long time. This means that it would al-

ways be curable if the spot could be recognized and the cancer removed in time. In practice, it is often difficult, and in some cases impossible, for physicians to recognize it soon enough.

The patient should consult a physician immediately after recognizing that something is wrong. This is a vital matter. To cure cancer, it must be discovered early and treated promptly and skilfully. Delay is fatal. One must never wait to see if the trouble will not go away of itself. Spontaneous cures almost never occur.

The course of action, then, is for the patient to get into the hands of a competent medical adviser while the disease is still in the early and curable stage, or, better, while merely those conditions exist which predispose to cancer.

To remove or avoid the conditions which lead to cancer is to prevent it.

To reduce the danger of dying of cancer to a minimum, one should take reasonable precautions to avoid it, learn how to recognize its principal danger signals, in order to be ready to act promptly in the event of an attack, and go immediately to a good doctor upon the first suspicion that the disease is present.

People must be careful not to invite an attack by exposing themselves needlessly to conditions which lead to cancer; and they must be quick to suspect the presence of the disease

when it begins. They must realize that early surgical removal, or the application of other remedies which are sometimes useful in competent hands, affords the only hope of cure. They must understand that there is often a chance for cure if they will act promptly.

## How to Choose a Good Doctor

It has sometimes been said in criticism of publicly spreading information about cancer that such knowledge will drive people to quacks, or that unscrupulous and dishonest doctors will perform unnecessary operations on those who merely fear they have cancer, but actually have only relatively harmless lumps or a few of the symptoms of the disease.

The danger of quackery is a serious one. Many people who should know better fall into the hands of quacks, who, while pretending to cure them, extract all the money possible before their victims die of the disease.

The American Society for the Control of Cancer endeavors so to direct those who need aid as to enable them to find capable help; in other words, to get good advice instead of bad. The person most competent to give advice is a well-educated physician.

It is sometimes difficult for laymen to tell good doctors from less capable ones. There are ways of deciding this matter. In the first place, most people already know some doctor

who has taken care of them before, and whom they feel they can trust. By all means, he should be called in now. He will, if the case puzzles him, call in a consultant.

If one has no family doctor, there are certain rules for making a choice, as follows: In the first place, a doctor who advertises evidently cares more for business than for his reputation—avoid him. Always seek a doctor who belongs to a medical society and attends the meetings. He is keeping up his education, for the science and art of medicine are always growing.

If there is a hospital in your town, ask the superintendent for the name of the most capable physician connected with the institution, and consult him. Do not be afraid of high charges, for the most skilful men often do the largest amount of charitable work—they can afford to. If you have no money, go to a clinic, for the best doctors work there.

If there is no hospital, ask some friend to find out what medical man takes care of his or her doctor's family. Go and see this man. He will certainly be competent. His knowledge is good; and his hospital training has enabled him to learn much in a short time under the guidance of competent medical and surgical instructors.

Avoid the surgeon who demands that an immediate operation be performed and refuses a consultation. A cancer is a question of life

or death, and, as it is often difficult to diagnose, two opinions are better than one. The unscrupulous physician who is merely looking for operation fees will not consent to a consultation which might reveal his erroneous diagnosis.

## Why Do People Delay Going to a Physician?

Statistics prove that the average cancer patient, after discovering that something is wrong, usually waits months or even a year or more before obtaining medical advice or treatment.

Why is this? One reason is that the patients do not realize that cancer starts from a trifling beginning. If they do have a suspicion that they have cancer, they too often ignore or conceal it either through fatalistic despair or false and fatal modesty.

The old-fashioned idea that cancer is a "blood disease" still exerts a wide and baleful influence. The thought that cancer may be hereditary makes one who has it desire to conceal it. Heredity has not been proved to be an important factor in the occurrence of the common types of cancer.

Above all other causes of delay is the absence of pain in the beginning. Usually there is no pain to compel action while there is still time enough to be cured. By the time the

symptoms are so marked as to cause alarm, it is often too late, for by this time the cancer has probably obtained a foothold from which it cannot be dislodged. If, indeed, the early symptoms of cancer caused half as much trouble as a toothache, many more lives would be saved, because the patient would be driven to consult a physician in time.

The fact that people generally are not familiar with the symptoms of cancer, makes it difficult to effect more cures; for, unless they are prepared to recognize the signs that mark the beginning of cancer, people are helplessly open to its ravages.

A little knowledge in this case is not dangerous; it is of great value.

## How Cancer Begins

Cancer is a disease in which the tissues, or substance, of certain parts of the body run wild. For example, a few cells* in the breast or in the liver, or in some other organ, grow beyond their natural limits and invade the surrounding tissues. That is cancer.

The cancer sometimes does not give any evidence of its presence until a long time after

*The body is made up of small elements called cells, which when packed together form the organs of the body. The cells are different for each organ; those, for example, of which the skin is composed are entirely unlike those which compose the liver or brain.

it has begun to grow. One does not recognize the fact that a cancer is growing until it becomes of considerable size.

### Cancer Not a Germ Disease

Considering that cancer is such a formidable disease, it is gratifying to know that certain fears about it are unfounded. In many respects, it is quite unlike the diseases which are known to be due to germs, concerning which so much has been learned in the last thirty years.

### Cancer Not Contagious

Cancer is not contagious, and there is no danger in nursing or treating a case. Ordinary cleanliness requires that the soiled dressings and discharges from a patient suffering from cancer shall be carefully collected and burned—not because there is any danger of one's becoming infected with cancer, but because the discharges and dressings contain germs such as those which cause boils, erysipelas and other inflammations.

In a word, the idea that cancer may be transferred from one person to another by direct contact should be dismissed. In all the recorded operations for cancer, there is no report of a case of cancer acquired from a patient by any surgeon or nurse.

Cruel neglect of patients has been known to occur because of groundless fear of "catching" the disease. This is particularly unfortunate since cancer in the incurable stages calls for the most patient and devoted care of the sufferer.

As cancer is not contagious, there is no reason to believe the stories so often told of "cancer houses," "cancer villages," or "cancer belts." The occurrence, year after year, of an unusual number of cases of cancer in a single house can generally be shown to be due to the fact that the house has been occupied by an unusual number of old people. Since cancer is most prevalent among persons of old age, there will naturally be more cases of the disease in such a house than in one which is occupied by younger people.

Thus, also, "cancer villages" will usually be found to be small places from which most of the young people have gone to larger towns in order to obtain work, leaving the older people behind. Since these old people are much more likely to develop cancer because of their age, there is an apparent increase in the number of cases in the village.

A similar effect has been produced in some of the New England States. These states have the highest cancer rates of any in the United States, while most of the Western States, which are largely populated by younger per-

sons, have very low cancer rates. While the general percentage of cancer in the New England States has increased, it will be found on examining the statistics that there is no increase in the number of cases which have occurred at the age, say, of sixty, over the number which would usually occur at the same age in the general population of the whole country.

## Cancer Not Hereditary

Cancer itself is not hereditary.

Therefore, there is no reason to worry because one member of a family has suffered from the disease. It does not follow that any other member of the family will have it. If a certain number of cases of cancer occur in a community, one family will naturally have two or three cases while other families will have none. This may be due to coincidence.

In a family, the members of which tend to be very long-lived, more cases of cancer will occur than in one in which the members die young. This is not because cancer is hereditary, but because it is chiefly a disease of middle and later life.

Even those students of heredity who hold the strongest views on the subject do not believe that cancer itself is inherited, but merely that a liability to the disease is passed on.

While every one should know the symptoms, people who have had much cancer in their families should take particular pains to inform themselves carefully about the disease and its diagnosis and treatment and take all reasonable precautions.

## The Prevention of Cancer

When we state that we do not know all the causes of cancer, we mean that we do not yet know exactly what makes a small cell or group of cells change their nature and take on the extraordinary power of growth that is the fundamental characteristic of this disease.

A great deal is known about the circumstances attending these new growths, when and where they take place, and what conditions favor the process; and much of the information is of distinctly practical value. Even though we do not know all the causes of cancer, we do know a good deal about how it occurs and what conditions are apt to precede it. By avoiding or correcting these conditions, we can prevent cancer.

For instance, cancer frequently begins in moles or pigmented warts which are irritated by the clothes, or are made to bleed and are kept sore by repeated injury. Such warts and moles are perfectly harmless at first. They

become dangerous only after they have been irritated in some way for a long time, especially if the person is of the cancer age—that is, above thirty-five. It is wise to have such moles or warts removed, if located where they may be rubbed or injured.

It has also been found that cancer frequently develops in the scar of an old burn, or in a place where there is a chronic ulcer, as on the lip, tongue or leg. Care should be taken to see that such ulcers are healed as quickly as possible.

Ulcers on the tongue and cheek frequently result from a scratch from a poor filling or from the sharp point of a decayed tooth. A dentist should be consulted if such an ulcer does not heal within a few days, in order that the filling may receive proper attention or the point of the tooth be filed off.

Cancers of the uterus often begin at the site of an injury resulting from childbirth. Consequently, all such injuries should be repaired as a measure of protection against cancer.

It is not improbable that cancer of the stomach may be brought about by the frequent consumption of highly irritating substances, such as condiments, alcoholic liquor or excessively hot or cold beverages. These should be used in moderation, or not at all, if cancer of the stomach is to be avoided. It is

important for any one who has any disturbance of the stomach or intestines which cannot be promptly and satisfactorily accounted for, especially if there is loss of weight or anemia, to go at once to a surgeon, because by modern chemical methods and by the use of X-ray photographs, a diagnosis can often be made. Cancers of the stomach often arise from neglected ulcers, from which it follows that by giving proper attention to the cure of the ulcer, the formation of a cancer may be avoided.

It has long been known that irritating substances such as soot, tar, crude petroleum and certain of the chemicals used in making aniline dyes, may set up a chronic inflammation which may lead to cancer. Workers in these products should promptly consult a physician if any such trouble appears.

Smokers should be particularly careful about any sore on the lip or tongue. Such sores are commonly found in persons who use a pipe in such a way that the tongue or lips are chronically irritated by the hot stem, or who hold cigars in such a manner that the hot smoke continually strikes one spot. For this reason, cancer of the lip and tongue is very common in men, and is almost never seen in women.

All the irritants which have just been men-

tioned do not always cause cancer, but they give the cancer a chance to begin. If a man past middle life does not smoke heavily, cares for his teeth, and keeps his mouth clean, he is much less likely to have cancer of the mouth, lips or tongue than one who does not follow this course.

Cancer of the lower bowel is frequently preceded by chronic inflammation. Therefore, persons who think they have chronic indigestion, dysentery, ulceration of the bowel or bleeding piles, should consult a physician in order to make sure whether their symptoms may not be due to beginning cancer.

Any woman who notices a lump in the breast should at once consult a physician. In most cases she will be told that the lump is harmless and need not be removed. And even if removal is necessary it is much better to be told that it is an early and curable cancer than to wait until the disease is too far advanced to be eradicated.

It is a good plan to have a thorough physical examination made by a competent physician once a year. Many early and unsuspected cancers have thus been discovered, and conditions which may lead to cancer can then be found and steps be taken to prevent the cancer from beginning.

Cancer attacks not only persons who are in

feeble health, but also, and with equal frequency, those who are strong and healthy, and have never suffered from any other serious disease. For this reason, it is quite as important that healthy people consult a physician if any sudden change in their well-being takes place, as it is that any one else should do so.

# CANCER IN VARIOUS LOCATIONS

## II.

## CANCER IN VARIOUS LOCATIONS

There are many kinds of cancer, and each kind grows in its own way.

Certain forms, some of which arise in glands, such as those of the breast, are called *carcinoma*. These spread slowly from their points of origin by means of small particles or cells which are transported to places where there are small nodules, called lymph-nodes. Here the cells collect, forming secondary cancers by metastasis, as physicians term this process. Particles of the true carcinomata do not often get into the blood vessels in the early stages, and this form of cancer therefore remains localized for a considerable time. Consequently, the physician has an opportunity to remove it, if the diagnosis is made early.

Another kind of cancer, called *sarcoma*, occurs in the bones and soft supporting tissues. It frequently spreads by cells getting into the blood vessels. Sarcoma is much more difficult to cure than carcinoma, because the spreading takes place earlier in the course of the disease, and for the reason that the cells are swept all over the body, starting new cancers wherever they are deposited.

Although cancers grow into and through the very tissues which surround them, they do not have roots, as misinformed people sometimes suppose. What are called roots are frequently blood vessels or bits of fibrous tissue. When a charlatan assures a patient that he takes a cancer out "by the roots," he talks nonsense.

Some cancers grow very slowly. They may remain for ten or twenty years without spreading and without forming secondary growths elsewhere. Others grow very rapidly and are fatal within a few months. It is never safe to assume that a given cancer will grow slowly even though it appears to have done so in the past. Nor is it wise to suppose it will not spread to another part of the body because it has not done so hitherto.

## Cancer of the Breast

This form of cancer generally attacks women over thirty-five, although now and then it is seen in younger women. Over 8,500 deaths in the United States occur yearly from this cause.

It is estimated that by old-fashioned methods 20 per cent. were curable; that by modern methods 50 per cent. can be cured; and that by modern methods combined with very early treatment 70 per cent. of the women who are attacked by this form of cancer can be made well.

The chief symptom in the beginning is a lump or thickening anywhere in the breast, or a thin, bloody discharge from the nipple. There may be a dimpling of the skin over the place.

No woman who has a lump in her breast, no matter how small it may be, should fail to go at once to a competent physician. It matters not where this is, for cancer may start in any part of the breast or in the nipple itself. A woman should seek prompt advice on the first appearance of a discharge from the nipple, for, if she waits until the late symptoms appear—pain, loss of strength and weight, drawing in of the nipple and increase in size of the lump—the possibility of a cure is doubtful.

The early removal of the cancer, with such part of the breast as the physician may find necessary, is the only safe, curative procedure.

Not all lumps which occur in women's breasts are cancerous, but only competent physicians are able to distinguish between the dangerous and the harmless ones. Except in advanced stages of the disease the woman herself is not likely to know.

A small lump which is not cancerous may change into cancer. After the age of forty-five small lumps which show signs of growth should be excised. If this were always done, a large percentage of cases of cancer could be prevented or permanently cured.

## Cancer of the Uterus

In women, the uterus or womb is one of the most frequent sites of the disease, 11,403 cases occurring in the Registration Area of the United States in 1924, or over 12,000 in the entire country.

In many ways, cancer of the uterus is the most dreaded form of cancer, for it attacks most frequently wives and mothers, and at the most important period of their lives.

Except in its earliest stages cancer of the uterus is attended by much physical suffering; for, on account of the proximity of the uterus to the bladder and bowel, cancer in this organ gives rise to distressing and offensive discharges. It is not to be wondered at, therefore, that the present educational movement for the early recognition of cancer began among those whose lot it was to treat cancer of the womb.

Uterine cancer occurs with greater frequency among women who have had children than among those who have not borne any. The injuries and inflammation following childbirth are a causative factor in the disease. Women who have deep tears or pronounced irritation about the neck of the uterus should have these conditions corrected and should be kept under observation during the years between thirty-five and fifty.

The first symptom of cancer of the womb

is, in the vast majority of cases, an irregular, blood-tinged, water discharge. No pain is present nor can any lumps be felt at this time. Of course it can be readily understood that this is a symptom that may also be due to many harmless conditions, especially if it occurs before menstruation has ceased. In women who have passed the period of life usually termed the "menopause" or "change of life," such a blood-tinged discharge is often due to a cancer. Every woman over thirty-five years of age should consult a physician if there appears an irregular, bloody discharge such as described. It is particularly important to have such an examination made if the bleeding follows upon taking a douche or after intercourse.

It is of the utmost importance for women to understand that it is never normal to flow excessively nor to lose blood, however little or much between periods, nor for the flow to return months or years after the change of life has been established. It should be known that in such instances there may be a beginning of cancer and that this possibility calls for an immediate medical examination.

As the disease progresses the discharge becomes odorous. A rather free odorous discharge, even in the absence of blood, deserves careful investigation. When, in addition to this, the patient has pain radiating down the legs it is probable that the cancer has advanced far.

To make a positive diagnosis of cancer of the uterus, an internal examination by a competent physician is necessary. It is the only means of ascertaining the truth. The woman who puts off or shuns such an examination for any reason is taking a serious risk.

As in most other forms of cancer, the best treatment for cancer of the uterus usually is the early surgical removal of the organ in which the cancer is located, together with as much surrounding tissue as the surgeon finds necessary. This is a serious operation and should be done only by those who have had considerable experience in this kind of work.

In recent years radium and deep X-ray treatments have been employed with success in uterine cancer. They should be given only by those who have made a careful study of the subject and who have the facilities for giving the proper dosage.

Patients with uterine cancer can be divided into three groups:

1. Those who come to the physician at the very beginning of their trouble.

2. Those who delay three or four months before attending to the matter.

3. Those who put off treatment until they experience pain or have had a bad discharge for almost a year.

The women of the first group can, in many cases, be permanently cured. Even those in this group who have a return of the disease

after an operation can usually be given several more years of life free from pain or discomfort.

In the second group the percentage of women cured is much smaller than in the first.

In the third group there are practically no cures and but little temporary relief from the suffering and discharge.

It largely depends upon the woman herself into which of these three groups she will fall. If she is on her guard against suspicious symptoms, and will not hesitate to undergo one or more examinations in order that no important matter may be overlooked, then and *only* then can she have reasonable certainty of cure.

## Cancer of the Skin

Cancer of the skin is called epithelioma. Most of these cases occur in men. About one-half are located on the face.

Cancers of the skin most often develop after the age of fifty, but many occur much earlier.

Like all cancers, epithelioma usually begins so insidiously that its victim finds it impossible to say when he first noticed the little lump or scaling patch that is later found to be cancer.

Cancer of the skin is painless, and on this account the patient usually pays no attention to it until it becomes unsightly. Even then, it may not be brought to the attention of a physician for a long time.

If the growth is located near an eye, it may

damage the lid so as ultimately to affect the sight. If located near the nose—and both these regions are common locations for epithelioma—the damage done may lead to great deformity even though the patient later goes to a skilful physician.

Most skin cancers start as small, round or flat-topped slightly raised spots. They may increase in size very slowly. Sooner or later, sometimes after several years, there comes a scab to cover the little growth or part of it. This scab is usually pulled off by a towel or fingernail, or in some other accidental way, which causes bleeding; then a new scab forms on the sore, which perhaps has meanwhile grown larger. The new scab may again be knocked or pulled off, and so on—the cancer all the while becoming larger. Sometimes it heals up entirely at one side, and advances at another.

Occasionally the cancer shows a tendency to rapid growth from the start, and forms a raised, reddish, cauliflower-like tumor, which any one at all concerned about his appearance will soon call to a physician's attention.

Most epitheliomata remain purely skin trouble, but the possibility of a spread to internal organs is always present and is in itself a good reason for not neglecting them. Rapidly growing cancers are particularly dangerous, for they have a tendency to spread to the internal organs.

One factor stands out prominently in the production of epitheliomata. In a large proportion of cases there has been some long-continued irritation at the place where the cancer has started. This irritation may be caused by the frequent injury of a mole by a razor in shaving. It may be the result of constant picking at a little, harmless, scaling or crusted spot on the skin.

The treatment of moles by "beauty doctors," or by the use of electricity or caustics—methods which do not assure the complete removal of the deeper parts of the mole—is responsible for some epitheliomata. In these cases, traces of the original mole are left behind and become subject to constant irritation from the pull of the scar that is produced by the treatment.

A brown or black mole should be let alone so long as it shows no signs of growth, or, if it is so defacing that its removal for cosmetic purposes is desired, it should be cut out by a surgeon. If it is removed, the resulting clear scar is usually less disfiguring than the mole, and the possibility of the malignant development of the mole is forever eliminated. The moles which are most likely to give rise to cancer are the prominent, black, warty and hairy moles.

In treating moles, the one aim should be thoroughness of removal. Any method which is capable of wholly removing or destroying

them may be used by the physician. Cutting them out with a knife or a cautery blade does this effectively, and in most cases is the best method; but when the epithelioma is located near the eyelids or near the tip of the nose, the deformity that would be produced by a good cutting operation may be so great that other methods of treatment may be considered. In such cases many surgeons prefer to use radium or X-rays, or to employ the methods of scraping and cauterization. These all give excellent results in the hands of experts.

## Cancer of the Lip

Cancer of the lip occurs frequently in men, and occasionally in women. It almost always appears on the *lower* lip. Indeed, cancer of the upper lip is exceedingly rare, unless it be an extension of a far advanced growth on the lower lip.

This type of cancer may develop at any time after the age of fifteen, but it rarely occurs until after forty. It appears in many instances at a point which is subjected to continual irritation, such as that from a rough or hot pipe stem, or from hot cigar smoke, or, more often, from a broken or decayed tooth. Non-smokers, however, may develop this type of cancer, and of course many who have smoked for years never have it.

Cancer of the lower lip almost always begins

as a small, painless surface sore, much like the familiar cold sore; but it may be accompanied by even less discomfort. A tiny crack or scaly patch on the lip becomes covered with a thin crust, which in a few days falls off. But, instead of leaving behind a new, thin, smooth mucous membrane, the crack remains. It does not discharge nor bleed, and another crust forms. This in turn separates, or may be pushed off by the tongue, still leaving a small, raw, uncovered spot behind. Up to this point, the process has taken perhaps a month. From this time on the cycle is repeated over and over again, except that gradually the raw spot, or ulcer, becomes larger, the edges a little firmer, and a trace of blood appears.

If still allowed to continue untreated, the ulcer becomes larger. It may extend down below the red lip margin. It may start secondary growths, as, for example, a small lump or node under the chin, below and behind the cancer. At this stage, the cancer has become far more dangerous than when it was simply a local, superficial sore.

The best treatment is a complete removal of all the diseased tissues by a competent surgeon. Advice should be sought by any person who has an open sore of any sort upon the lip which does not readily disappear. Such a sore is not necessarily a cancer. Nevertheless, it should always be made the subject of thorough investigation.

To prevent cancer of the lip one should avoid the continual irritations which lead to it, whether these irritations are in the form of a hot pipe stem, a pulling off of the skin in removing cigarettes from the mouth, or other form.

### Cancer of the Tongue

This form of the disease, a little less frequent than cancer of the lip, is like it in commencing as a crack or a raw spot. But in this case it is on the smooth edge of the tongue. It is usually considered to be a "canker" sore. It is frequently situated at a point in contact with a broken or decayed and sharp-edged tooth. Pain, except in very slight degree, is usually absent. The small spot does not heal. It slowly grows both deeper and larger. Its edges are a little, but not very much, harder than the rest of the tongue.

This is the favorable time for complete removal by a competent surgeon, for the operation can be more thoroughly done and is less extensive than is possible later. An operation at a late stage can never be as successful as one undertaken while the cancer is still local and limited.

In the course of a few months, if the cancer is not removed, a small pea-shaped gland may be found under the chin, or at the angle of the jaw; but it is often absent, or at least very

difficult to feel, especially if the chin is held up and the muscles contracted during the examination. Gradually, a slight odor and an increase of saliva is noted, as the ulcer enlarges.

The sore may be situated anywhere on the tongue, but is most often located on one side of the forward half. As it grows, some of the free motion of the tongue is lost.

To offer any prospect of cure, advice must be sought long before the late stage has arrived, for cancer of the tongue is an extremely serious form of the disease.

## Cancer of the Cheek

This type of the disease, which develops on the inner surface of the cheek, resembles cancer of the tongue and lip in most cases.

A small, raw, painless sore may appear on the inner side of the cheek, usually in contact with a bad tooth. It may be situated in the depression between the cheek and the gums. It is like tongue cancer in its progress. Attention should be given to it at an early date; that is, as soon as observed.

So far as is known, chronic irritation is the only factor that is common in the causation of these three forms of cancer, though syphilis seems to increase one's susceptibility to it.

In this situation, as elsewhere, constant irritation seems rather to diminish local resistance to, than to be the actual cause of, the cancer.

## Cancer of the Nose and Throat

Many varieties of cancer may occur in the nose, in the cavities communicating with the nose, and in the upper pharynx. In any of these positions, it is always a very serious condition.

The earliest symptoms are, as a rule, a swelling, which may interfere with the passage of air through the affected side of the nose, increased discharge from that side, local pain and neuralgia, headache, loss of appetite and weight. These symptoms may appear one at a time or come on successively, and so suggest to the patient no more than inflammation. By the time a permanent swelling of the nose or cheek indicates strong probability of cancer, the disease has generally advanced to an exceedingly dangerous point. As a rule, the cancers in this region grow with great rapidity, so that early recognition is imperative.

Frequent bleeding from the nose or mouth with changes in the voice suggest the possibility of cancer. Later there is difficulty in swallowing.

The treatment of nasal cancers depends on the location, character and extent of the growth. Many harmless tumors are permanently removed by a simple operation; sometimes cancers are cured. Other forms of treatment, such as electro-cautery, electrolysis and radium are occasionally used with beneficial

results in advanced cases or in elderly patients upon whom a surgical operation is not advisable.

Where a suspicion of cancer arises, the case should at once have the benefit of the best expert advice.

### Cancer of the Larynx

Cancer of the larynx is not common. It constitutes about 0.8 per cent. of all carcinomata. About one in seven of all growths in the larynx are cancer. It is rare in youth. About 40 per cent. of the cases occur between the ages of fifty and sixty, and 84 per cent. between forty and seventy. Over 80 per cent. occur in men and 20 per cent. in women.

The fundamental causes are not known; local irritation arising from various conditions excites it. The causative influence of tobacco is questionable; where cancer of the larynx is present, however, the use of tobacco should be discontinued.

The earliest symptoms are a change in voice, difficulty in speaking, a sense of discomfort in the throat and sometimes a slight cough. Pain may be present, or not. If present, it is sharp and shooting in character, and felt in the larynx. Loss of voice eventually follows, with difficulty and pain in swallowing, and there is a copious expectoration of fetid material. As the surrounding muscles and glands are invaded, there is swelling of the neck.

If recognized very early, while the disease is confined to a small area within the interior of the larynx, successful operations are possible, but only at the hands of a skilled surgeon who is especially trained in this particular kind of work. Local treatment by radiation may save considerable suffering and prolong life.

### Cancer of the Tonsil

Primary cancer of the tonsil is infrequent. This gland may be attacked either by sarcoma or carcinoma. Both forms begin in one tonsil only; therefore persistent symptoms confined to one tonsil should always arouse suspicion.

Sarcoma of the tonsil may develop at any age, but is most common between fifteen and thirty.

The early symptoms are congestion of the tonsil and nearby mucous membrane, soon followed by an enlargement of that gland. Pain, when present at all, is usually dull, though there is often a sense of fulness in the throat, a thick voice and difficulty in swallowing. The glands of the neck are slow to enlarge. Simple, subacute tonsilitis, syphilis and most other forms of tonsillar congestion and enlargement usually respond to medical treatment; sarcoma does not respond.

The growth is smooth, dark red, bleeds easily and often ulcerates early. In the later stages, the disease makes an extensive advancement in all directions, involving the im-

portant structures of the neck, making the outlook hopeless.

Whatever prospect of successful treatment there may be lies in the early removal of the cancer or efficient X-ray or radium treatment.

Carcinoma of the tonsil is more frequent than is sarcoma, and occurs, like most forms of cancer, in middle and advanced life. The earliest symptoms, often very obscure, are pain in the region of the tonsil, congestion, swelling and discharge from the tonsillar crypts. The surface is not inclined to bleed. Later, there is increasing pain, radiating to the ear and aggravated by the act of swallowing. There is fulness in the throat, and a thick voice.

The progress is usually rapid. Ulceration occurs late, but the glands are involved early. Anemia follows, with a swelling of the larynx to such an extent that it may be necessary to admit air to the lungs by inserting a tube into the trachea.

Carcinoma of the tonsil has seldom been successfully treated by radical surgical removal. Operations should only be employed at the hands of a surgeon of highly exceptional skill and experience. Half-way measures are worse than useless.

At best, the results of treatment are usually only palliative. Of course, the smaller and less active the growth, and the earlier it is recognized, the better the outlook. Radium and X-ray treatment have been used in some cases with encouraging success.

## Cancer of the Stomach

The stomach is the seat of this disease in nearly one-third of all the fatal cases of cancer in men, and one-fifth in women. These proportions are indicated by the figures of the Census Bureau for 1924 for the Registration Area of the United States.

One should think of the stomach as a muscular, contractile bag, lined with mucous membrane. When it contains food, it is in continual motion. If the food consists of hard lumps, instead of soft, well-masticated material, the lining of the stomach is more or less bruised and this bruising is most frequent at the outlet where the muscular walls of the organ are in most violent motion. Most cancers of the stomach occur near the outlet.

A stomach previously rendered sensitive by irritating substances has a lowered resistance. Examples of such substances are alcohol, and hot, or highly seasoned, food. The excessive use of these may be accompanied by a retardation of digestion, and by the secretion of too much acid. These conditions predispose to ulcer and it is thought that any condition which predisposes to ulcer of the stomach may predispose to cancer.

The symptoms of ulcer and those of cancer are often similar. There is distress after eating, at times amounting to actual pain. A change in the desire for certain foods, such as

a distaste for meat, is not uncommon. Belching, nausea and vomiting occur later. With ulcer, the vomiting of blood is more common than with cancer, but this sign is not rare in the later stages of cancer.

The general health suffers, there is loss of weight and sallowness of the complexion. Until the disease is far advanced, there is no visible lump nor one which can be felt from the outside, even by a skilful physician.

When the cancer is at the outlet of the stomach, the symptoms of disease, pain and vomiting, show themselves earlier than when it is remote from the outlet. Cancer of the upper end, or inlet, of the stomach is accompanied by difficulty in swallowing solid food.

The outlook for cure depends upon the possibility of completely removing the cancer. Unfortunately, most of the cases in which an operation is undertaken are so far advanced by the time the physician sees the patient that only palliation is possible.

Cancers of the stomach can to a certain extent be prevented. Since cancers may follow ulcers, it is evident that the ulcers should be recognized and cured before cancerous degeneration occurs. The methods of modern diagnosis, including the use of the X-ray, will usually determine whether the condition requires an operation or not.

After the age of thirty-five, a complete physical examination is imperative in all cases

of indigestion that cannot otherwise be satisfactorily explained.

### Cancer of the Intestines

When cancer of the intestines occurs, it is almost always in the large bowel. One cancer occurs in this locality to every two in the stomach.

One-half of the cancers of the intestines are situated in its lowest portion, called the rectum. More than half of all the cancers of the large intestine are in a portion of the bowel just above the rectum (on the left side), called the sigmoid.

Intestinal cancer occurs with about the same frequency in both sexes. It differs from most other forms of cancer in that it is found occasionally in young children.

There seem to be no local conditions which have any constant effect in the development of cancer in this location, but a number of the cases of cancer of the sigmoid develop in connection with the peculiar inflammatory condition called diverticulitis.

The symptoms differ somewhat according to whether the cancer originates in the large intestine proper or in the rectum.

In the large intestine proper, the growth, for the most part, tends to spread circularly around the gut, producing constriction. X-ray diagnosis may reveal a narrowing of the gut even in an early stage.

The earliest symptom which is ordinarily noticed by the patient is increasing constipation. It is regrettable that constipation does not more often lead to a proper early investigation. Many persons mistakenly believe that an increasing constipation is natural with advancing years. The excessive use of cathartics may, for a time, combat the tendency; but if a person with cancer of the intestine takes notice, he will usually find that action of the bowels under these conditions produces pain at a certain and constant point.

In cancer of the intestine, passage of blood is an inconstant symptom, many people passing little or none, excepting in the later stages. Abnormal passage of slime or mucus is more frequent.

Cancers of the intestines seldom attain a sufficiently large size to lead to their recognition until the late stages. The growth of the cancer is insidious and, until actual obstruction of the intestine occurs, the patient may not realize that anything is the matter with him. Failure of the general health, loss of flesh, alteration of color or jaundice, are late symptoms and may only become evident after the disease has existed for some time, perhaps two or three years.

Cancers of the intestines are extremely difficult to diagnose, because of the lack or late appearance of symptoms. Careful, periodic medical examinations after the age of thirty-

five would result in the discovery of many of these cases which now go unrecognized until they have advanced to an incurable stage.

### Cancer of the Rectum

The signs here are somewhat more definite and pronounced than in cancer of other parts of the intestine. Usually, cancer in this location starts on one side. Obstruction of the bowel is usually delayed until late in the disease.

Pain occurs more constantly in cancer of the rectum than in cancer of other parts of the intestine, but is not always present. An extensive growth sometimes exists without giving rise to very much pain, until the advanced or hopeless stages of the disease have been reached.

The passage of some blood and abnormal matter like slime or mucus occurs quite frequently. The movements may have an unusually offensive odor. As in the large intestine proper, the disease is usually of slow growth and the patient's general health may be maintained for a long time.

Correct diagnoses require the making of appropriate examinations by an expert, particularly X-ray pictures of the large intestine, and a thorough examination of the rectum by both touch and inspection, if necessary with the aid of an electrically lighted instrument.

Bleeding from the bowels is a symptom

which never should be neglected. While the blood comes most often from the presence of hemorrhoids, the fact that it does come from this source and not from some other condition should be satisfactorily demonstrated. Not infrequently, the two conditions—cancer and hemorrhoids—coexist. Most of the failures to recognize cancer of the rectum have come from assuming that the symptoms were those of hemorrhoids only.

The proper treatment of cancer of the intestines and rectum is surgical, if the disease is in an early stage. Some portions of the large intestine lend themselves well to the performance of a very satisfactory, safe and efficient radical operation.

Radium and X-rays relieve pain and prolong life, but rarely afford a permanent cure.

The early surgical treatment of cancer of the large intestine is often successful. Cancer of the rectum has, on the whole, greater technical difficulties. The outlook for advanced and delayed cases is not good.

## Cancer of the Bladder

Cancer of the bladder is fairly frequent, forming about 3 per cent. of the total cancer deaths. This means that in the United States over 3,000 people die every year from it. It is two-and-a-half times as frequent among men as among women, and rarely occurs before the

age of thirty-five. The greatest number of cases are seen in patients from fifty to seventy years of age.

Cancer of the bladder is one of the difficult forms of cancer to diagnose and treat, because these growths may attain a considerable size before they give rise to any symptoms. Pain usually occurs only at a late stage and then sometimes only as a feeling of bearing down, or while straining to pass urine. It is rare that the cancer is so large that it can be felt through the abdominal wall.

It is of the utmost importance that the cardinal symptom of cancer of the bladder should be generally known. This symptom is blood in the urine, which appears without warning or apparent cause. When this occurs, a physician should be immediately consulted.

Blood in the urine is not necessarily a symptom of cancer. It may be caused by a stone in the bladder, by a non-malignant tumor of the bladder or by certain diseases of the kidney. The true cause can be ascertained only by a surgeon.

The patient should consult a surgeon the moment that blood is seen, since the tumors grow slowly, as a rule, and do not spread in the body until they have been present a long time.

A cure can be effected only by the removal of the cancer from the bladder. X-rays and radium are of value in delaying the growth

and relieving pain, and occasionally afford relief.

Three things are to be remembered: (1) The appearance of reddish coloring matter in the urine is a danger signal, whether or not it is accompanied by pain or by stoppage of the urine, or both; (2) when blood appears a surgeon should be immediately consulted; and (3) the only way in which a surgeon can make a positive diagnosis is by inserting an examining instrument into the bladder, so as to look in and see just what conditions are present. If a physician cannot do this, he can only guess at the cause of the trouble.

## Cancer of the Kidney

The only symptoms of cancer of the kidney are a lump in the abdomen or blood in the urine or both. A shadow may be seen on X-ray examination. Pain in the back or abdomen occurs in more than half the cases, but usually only when the tumor is large. The only cure is operation as early as possible. Fortunately, such cancers are comparatively rare.

## Cancer of the Bones and Connective Tissues

That form of cancer, known to physicians as sarcoma occurs in the bones, muscles and the soft parts of the body, in the sheaths of the

tendons, in the lymph-nodes and in a few other situations. These sarcomata are much rarer than the usual types. They furnish about ten per cent. of the total deaths from cancer.

Sarcomata vary greatly in their malignant qualities; some are almost always harmless, others are among the most dangerous varieties of cancer.

Lymph-node cancers are almost always multiple, involving many, or all, of the lymphoid structures of the body. They are usually entirely beyond the power of the surgeon to cure. X-rays or radium will keep them in abeyance for a time.

Sarcomata of the connective tissues appear under the skin as soft, painless, flat or oval masses, which grow rapidly. They may be movable, or attached to the surface of a bone or muscle. If they are not promptly removed surgically, they are inevitably fatal. Radium and X-rays seem to have little effect upon most of them.

Cancers of the tendon-sheaths are harmless, if cut out early.

Cancers of the interior of the bone are very malignant; others less so. The symptoms are few. Usually vague pains are noticed. Frequently these are treated for a long time as rheumatism or sciatica. The limp may be stiff; its movements interfered with. If X-ray pictures are taken, it will be found that the bone

is softened and absorbed. This is the only way in which an early diagnosis can be made. When the cancer extends through the bone or begins to push out the bone by its growth, it is usually so far advanced that it is very difficult to cure.

If found early, the best treatment is to remove the cancer by amputating the limb in the bones of which it has grown. Certain kinds do well with radium or X-rays; and if a diagnosis can be made in time, treatment of this sort is often beneficial. Owing to the fact that late diagnosis is usual, because of the lack of characteristic symptoms, bone cancers form one of the most difficult and disappointing forms of the disease to treat.

# CONCLUSIONS

## III.

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The opinion which has been reached by some of the foremost statisticians of the United States is that cancer is slowly increasing in this country. Unquestionably, it is one of the most important causes of death among people of thirty-five years and over.

The public is ignorant of the symptoms and not aware of the necessity for early treatment. Because of this lack of knowledge, relatively few patients go to a physician in time for satisfactory treatment.

As cancer is not a germ disease and is not contagious, but is an abnormal growth of cells in the body, it cannot be surpressed by public health measures such, for example, as have so greatly diminished typhoid fever and tuberculosis.

Medicines taken internally have no value. No serum is known which, when injected, will cure cancer.

Neither pastes, plasters nor other non-operative methods, so widely advertised by quacks, are effective methods for the treatment of cancer. The favorable results, reported in the newspapers and in the advertising material

and testimonials of charlatans, are generally obtained with ulcerating growths which are not cancerous. There is no question that some cancers can be destroyed by caustics; but much of the normal tissue about the cancer is also eaten away. The caustic is less easy to control in its action and much less certain than the removal of the cancer by the knife.

Radium and X-rays have been much used of late in the treatment of cancers of the skin, and have been found to be of great value in certain types of the disease.

Other cancers are very difficult to cure by radiation, even when it is used in large quantity. When a skin cancer has grown into nearby bone or cartilage, or has spread through previous ineffectual treatment by caustics, or when the growth is complicated with syphilis or tuberculosis, the results are unsatisfactory.

Cancers of the tongue, lip, mouth and especially those of the womb, have been treated by radiation with success; but it is still the general opinion of those who work with radium that, for the present at least, all cases of dangerous or malignant tumors which can be successfully removed by surgical operation should be so treated, radiation being reserved for such cancers as are beyond the reach of surgery.

Deep-seated cancers, such as those of the breast, lung, stomach, abdomen, intestinal tract and bladder, are usually beyond the ef-

fective reach of radium, but often much improvement can be obtained by carefully adjusted applications of X-rays.

The proper use of radium requires large experience and great skill, if serious burns are to be avoided. As a rule, large quantities must be employed. Not every physician has a sufficient amount with which properly to treat cancer. X-rays have much the same effect on cancer that radium has. Suitable apparatus for the production of X-rays is not very expensive, so that if radium is not available, X-rays may very properly be used in treating those types of cancer which are favorably influenced by radium. It is not always possible to use X-rays effectively in cases of internal cancer, since it is difficult to get a sufficient quantity of the X-rays to penetrate to the organs which are affected.

In superficial cancers, when radium is not available, the X-rays should be used. Their use, soon after incomplete or palliative operations, often temporarily checks the growth and greatly prolongs the life and comfort of the patient.

Every one should remember that cancer begins as a small growth and that if it could be removed a short time after it appears it would always be curable. As the symptoms are not always characteristic, but are often obscure, it is necessary to consult a good physician at the earliest possible moment when the presence of

cancer is suspected. One should not delay nor apply home remedies in the hope that the trouble is of no importance.

In so far as the conditions which precede cancer can be avoided or removed, cancer is preventable. Briefly, irritation in some form is frequently an underlying or contributing cause; and since this can generally be stopped, a field has been opened for preventive work of a most valuable character.

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